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Sho 61-211393

SOIL ENHANCER

[Dojo Kairyozaï]

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Specification

1. Title of the invention

SOIL ENHANCER

2. Claims

1. A soil enhancer, characterized by the fact that a magnetic material is mixed with a main material with a large absorption; and minus ions are adsorbed to the mixture and mixed with an organic lime.

2. The soil enhancer of Claim 1, characterized by the fact that as the main material with a large absorption, an organic material such as activated carbon and peat-moss is used.

3. The soil enhancer of Claim 1, characterized by the fact that as the main material with a large absorption, an inorganic material such as perlite, zeolite, and vermiculite is used.

4. The soil enhancer of Claim 1, characterized by the fact that as the magnetic material, a magnetic fluid in which a powder-shaped magnet or magnetic material is dispersed in a colloidal shape in water or a liquid in which iron powder, etc., are dispersed in a colloidal shape in water is used.

¹ Numbers in the margin indicate pagination in the foreign text.

5. The soil enhancer of any of Claims 1-4, characterized by the fact that as the organic lime, a coral is used by pulverizing it into a powder shape.

3. Detailed explanation of the invention

(Industrial application field)

The present invention pertains to a soil enhancer. In particular, it pertains to a soil enhancer that can activate the properties of a soil when a substance with a magnetism, minus ions, and calcium are adsorbed to an activated carbon and mixed with the soil.

(Prior art)

In the agriculture, the harvest is increased by using a large amount of chemical fertilizer, however although the yield is increased in a short period, the soil oxidation, soil solidification phenomenon, etc., are generated. /2

Then, with the use of a large amount of chemical fertilizer, the decomposition of an organic substance in the soil is rapidly accelerated, so that undesirable phenomena such as decrease of the earth force and reduction of the harvest are generated, causing a big problem.

Also, as the soil enhancers that have been used, there are many kinds of soil enhancers, and for example, in order to

adjust pH of a soil, pH of the acidic soil is adjusted using alkaline soil enhancers such as lime and maintained in an appropriate state for crops. However, if the lime is used at a large amount, the solidification of the soil is accelerated, and the proliferation of useful microorganisms in the soil is inhibited, so that the activity intrinsic to the soil is frequently damaged, which is not much preferable.

However, a large amount of organic substance such as compost, waste soil, livestock excrements has recently been mixed into the soil, so that bacteria and microorganisms effective for the crops are proliferated in a natural state. In addition, the soil is activated by accelerating the aggregation of the soil, and the earth force is improved, so that the natural force intrinsic to the soil is sufficiently utilized. Thereby, an environment optimum for the growth of plants tends to be formed.

Furthermore, in addition to organic substances in the soil, a powder such as zeolite is mixed, and the properties of the soil is changed, or the retention performance of a fertilizer is improved. However, it is very difficult to completely improve the soil whose earth force is lowered by the chemical fertilizer.

(Problems to be solved by the invention)

The present invention improves the drawbacks of a farmland, and its purpose is to provide a soil enhancer that can change a soil whose properties have been deteriorated by the above-mentioned conventional chemical fertilizer. Furthermore, the purpose of the present invention is to provide a soil enhancer that can activate a soil in a natural state.

(Means to solve the problems)

The soil enhancer of the present invention is manufactured by mixing a magnetic material powder with a main material with a very large adsorption area such as activated carbon, injecting minus ions into the mixture, and mixing an organic lime such as coral powder.

As the main material of the present invention, materials with an adsorption area, for example, organic materials such as activated carbon and peat-moss and inorganic materials such as perlite, vermiculite, and zeolite can be used. Furthermore, as the magnetic material, iron powder, fine powder-shaped magnet, and other magnetic materials can be used. Then, the magnetic material is adsorbed to the main material, minus ions are implanted into it by an ion implantation device, and the direction of N-S of the magnetic material is prescribed.

Then, the soil enhancer is manufactured by mixing with calcium, so that it can have a very good effect on the proliferation and growth of microorganisms in the soil and the physiology of the corps by the multiplication effect of activated carbon + minus ions + magnetism + alkali. Furthermore, the activation of the soil can be accelerated.

As the organic lime being used in the soil enhancer of the present invention, a coral which has very many fine holes in itself and has a very large amount of calcium component may be used, however in addition, oyster shells, etc., crushed in a fine powder shape can also be used.

(Background of the invention)

According to the present invention, the effect on the physiology of corps is realized by giving a magnetism to a soil as have generally been mentioned. For example, the fact described in "Magnetism and Organisms" written by Fujio Takahashi, Society Press Center (published on October 10, 1984) is realized in an actual farmland. In other words, the above-mentioned publication shows that the proliferation of microorganisms is promoted in a relatively weak magnetic field. In general organisms, good results are generated by applying a relatively weak magnetic field during the proliferation. /3

Furthermore, in order to kill nematodes, a current with a high-voltage pulse shape is sent into a soil, and the purpose is achieved by its shock (see Japanese Kokai Patent Application No. Sho 59[1984]-216553). At the same time, it is also said that a magnetic field can be formed in a soil by sending a high-voltage current, and an inactive substance in the soil is ionized, so that the properties of the soil have recently been improved.

Also, there is a theory in which a drinking water containing alkali ions is very effective for the human body, and as seen from the fact that lots of soft drinks tend to be sold, the alkali ions are not limited to human beings but is effective for promoting the metabolism of all the organisms.

(Application examples)

In the soil enhancer of the present invention, as a main material with a large adsorption, organic materials such as activated carbon and peat-moss are used, or inorganic materials such as perlite, zeolite, and vermiculite which have fine cavities in the materials themselves, adsorb a mixed fine powder-shaped substrate to the cavities, and can reliably hold it are used. These materials have been generally used to improve the retention state of a fertilizer or to adjust pH of the soil when they are sprayed on the soil.

Also, as a magnetic material, a magnetic powder is used, or a finely crushed iron powder can be used. Then, the main material is mixed with the magnetic material powder, and minus ions are adsorbed to the mixture by an ion implantation device, and if the magnetic material is an iron powder, the iron powder is magnetized. Furthermore, if the magnet powder is used, the direction of the magnet is constantly aligned.

Then, the above-mentioned mixture is mixed with water and organic lime and sufficiently stirred, so that a humidity is given to the powder-shaped mixture. Thereby, it is prevented from being dispersed by wind, etc., during its handling. At the same time, the water is changed to an ionized water by the minus ions adsorbed in advance, and the effect is improved.

Also, as an organic lime being mixed into the soil enhancer of the present invention, oyster shells, etc., may be crushed into a fine powder shape, however if a coral is crushed into a fine powder shape, the effect can be further improved. The reason for this is that very fine holes and spaces are formed in the coral itself, the content of a calcium component is larger than that of the oyster shells, and it is not only simply used as a calcium component, but compost components or heavy metals are adsorbed and retained by utilizing the holes.

Next, application examples of the present invention are explained.

Application Example 1

500 g permanent magnet powder (1-5 μ) was mixed with 5 kg activated carbon powder (30-60 mesh) and sufficiently mixed, and the mixture was ionized by implanting minus ions at a voltage of 5,000 V by an ion implantation device. Then, 5 kg organic lime prepared by crushing a coral into a fine powder shape, and 5 kg water was mixed with it and sufficiently stirred, so that a soil enhancer was manufactured.

The soil enhancer was sprayed at 100-150 kg per 1,000 m² on a farmland on which an organic fertilizer such as compost and microorganism effective for a soil were sprayed, and a medicinal plant was cultured.

As a result, it was understood that the soil temperature of the farmland on which the soil enhancer of the present invention was sprayed was raised by about 0.5-0.7°C, and it was confirmed that compared with a farmland using a chemical fertilizer, the amount of harvest was increased by 10-20%.

Application Example 2

A soil enhancer was manufactured by a treatment similar to that of Application Example 1 except for using 5 kg fine zeolite powder instead of the activated carbon of Application Example 1.

Then, when this soil enhancer was sprayed at 100-150 /4 kg/1,000 m² along with an organic fertilizer such as compost and microorganisms effective for a soil, effects similar to the above-mentioned results could be confirmed.

Also, in the soil enhancer of the present invention, similar effects can be exerted by using organic materials such as peat-moss or inorganic materials such as perlite and vermiculite in addition to the above-mentioned activated carbon and zeolite. With the use of these materials, cavities are increase in the soil, the retention performance of the fertilizer components is improved by the main material with a large adsorption power, and the properties of the soil can be improved and activated.

Furthermore, in the soil enhancer of the present invention, the activated carbon as its main material has a large adsorption performance of harmful heavy metals such as mercury, chromium, and bismuth in the soil, and the heavy metals adsorbed once are not discharged to the outside but are stored in an adsorbed state to the inside, so that the harmful substances in the soil can be enriched and held.

In general, when the heavy metals in the soil are adsorbed to activated carbon, etc., if the acidity of the soil is strong, it is easily discharged to the outside, however since the soil

enhancer of the present invention includes a large amount of organic lime, the soil can always be maintained at alkalinity or neutrality, and if a coral is used as the organic lime, mercury, etc., which are not easily adsorbed to the activated carbon can be absorbed by the holes of the coral, so that harmful metals can be retained over a long term.

In addition to it, as mentioned above, since the soil enhancer of the present invention has a large adsorption performance of acid and iron, the iron adsorbed once is oxidized by the acid absorbed from the soil, and the divalent iron is changed to a trivalent iron by neutralizing the acid, so that it is held in a stable state or discharged to the outside of the main material. Thereby, it can also be used as a component effective for the soil.

Also, in the soil enhancer of the present invention, since the calcium ions initially mixed with the activated carbon can be sequentially discharged little by little into the soil, the calcium is not discharged at once into the soil, unlike the conventional soil enhancers, and a required calcium portion can be supplied little by little in accordance with the state of the soil. Therefore, pH of the soil can be constantly maintained in a natural state, so that the activities of the microorganisms in the soil can be held in a good state.

Also, in the soil enhancer of the present invention, the retention performance of the above-mentioned fertilizer is improved, and the proliferation of microorganisms in the soil is accelerated by the atmosphere of a magnetic field being formed by the magnet. In addition, the minus ions included in the soil enhancer and the plus ions for forming an acid component in the soil are repeatedly attracted or repelled to and from each other, so that colloids such as corrosive components in the soil are held in a floated state in the magnetic field. Thereby, the components of the soil can be activated.

Furthermore, the magnet included in the soil enhancer of the present invention is affected by a natural magnetic field such as geomagnetism and a natural energy such as cosmic rays and solar energy and are very finely moved, and the movement of the magnet and the variation of the magnetic field more effectively exert the effects of the above-mentioned soil enhancer.

The soil enhancer of the present invention has the above-mentioned components and can be effectively exerted on the soil. However with the combination of the soil enhancer of the present invention and microorganisms or completely heated composts shown in Japanese Kokoku Patent No. Sho 56[1981]-4526, compared with the use of only the present invention, the effects can be

further exerted. Then, in this case, the growth of the microorganisms sprayed along with the soil enhancer of the present invention is largely accelerated, so that the useful microorganism in the soil is rapidly proliferated and the soil components are immediately improved. Thereby, crops grow in a good state.

(Effects of the invention)

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Since the soil enhancer of the present invention is constituted by the above-mentioned composition, if it is mixed into a soil, the effect of a fertilizer component in organic agriculture, etc., can be largely improved.

Also, with the mixture of the soil enhancer of the present invention with an organic fertilizer such as compost and microorganisms effective for a soil, the properties of the soil can be further improved.

Furthermore, since each component constituting the soil enhancer is relatively inexpensive, an inexpensive soil enhancer can be provided to farmhouses.